**supermarket\_sales\_analysis.py**

# Supermarket Sales Analysis using Pandas, Matplotlib, and Seaborn  
  
import pandas as pd  
import matplotlib.pyplot as plt  
import seaborn as sns  
from datetime import datetime  
  
# Set seaborn style  
sns.set(style='whitegrid')  
  
**# Load dataset**df = pd.read\_csv('data/supermarket\_sales.csv')  
  
# Display basic info  
print("First 5 rows:")  
print(df.head())  
print("\nDataset Info:")  
print(df.info())  
  
**# Convert 'Date' and 'Time' columns**df['Date'] = pd.to\_datetime(df['Date'])  
df['Time'] = pd.to\_datetime(df['Time'], format='%H:%M:%S').dt.time  
df['Hour'] = pd.to\_datetime(df['Time'], format='%H:%M:%S').dt.hour  
  
**# 1. Peak Sales Hours**plt.figure(figsize=(10, 6))  
sns.histplot(df['Hour'], bins=24, kde=False)  
plt.title("Sales Volume by Hour of Day")  
plt.xlabel("Hour")  
plt.ylabel("Number of Sales")  
plt.xticks(range(0, 24))  
plt.tight\_layout()  
plt.show()  
  
**# 2. Best Performing Branches**branch\_sales = df.groupby('Branch')['Total'].sum().sort\_values(ascending=False)  
plt.figure(figsize=(8, 5))  
sns.barplot(x=branch\_sales.index, y=branch\_sales.values)  
plt.title("Total Sales by Branch")  
plt.xlabel("Branch")  
plt.ylabel("Total Sales")  
plt.tight\_layout()  
plt.show()  
  
**# 3. Payment Method Popularity**plt.figure(figsize=(7, 5))  
sns.countplot(data=df, x='Payment', order=df['Payment'].value\_counts().index)  
plt.title("Payment Method Distribution")  
plt.xlabel("Payment Method")  
plt.ylabel("Number of Transactions")  
plt.tight\_layout()  
plt.show()  
  
**# 4. Product Line Profitability**product\_sales = df.groupby('Product line')['Total'].sum().sort\_values()  
plt.figure(figsize=(10, 6))  
sns.barplot(x=product\_sales.values, y=product\_sales.index)  
plt.title("Total Sales by Product Line")  
plt.xlabel("Total Sales")  
plt.ylabel("Product Line")  
plt.tight\_layout()  
plt.show()